

better, though still rough, workmanship, was a small pipkin-like vessel, with its handle perfect. Some of these pieces were roughly and simply ornamented. Specimens from the uppermost level were clearly more modern.

Three of the caves yielded dark gray or black spindle-whorls of burnt clay, of fairly good workmanship.

The metal objects included a bronze fibula and ring, a silver coin supposed to be about the year 140, and iron arrow- and lance-heads of mediæval form.

We are grateful for this contribution to the palæontology and anthropology of Europe, and are encouraged by it to entertain the hope that Prof. Römer may be enabled to make arrangements for the *complete and systematic* exploration of at least one of the Ojcow caves at present untouched; and that sufficient means may be at his disposal to place the work under continued scientific superintendence.

OUR BOOK SHELF

Poisons: their Effects and Detection. By Alex. Wynter Blyth, M.R.C.S. (London: Charles Griffin and Co., 1884.)

THIS elaborate volume forms a part of the second edition of the author's treatise on "Practical Chemistry," which has been wisely split up into two volumes, one on "Foods," the other on "Poisons." Mr. Blyth's experience as a health-officer and public analyst guarantees that his conclusions are largely based on actual practice as a toxicologist; and the book will be found to abound in records of his own experiences.

But Mr. Blyth is also an accomplished linguist, and his book bears ample evidence of extensive reading, and a wide acquaintance with the European literature of toxicology. Almost every page teems with references to original memoirs in the French, German, and Italian languages; and this circumstance alone would render it an indispensable work of reference to be placed in the library of every toxicologist. But "Poisons" has other and distinguishing merits.

The general reader will find the introductory chapter on the old poison-lore of great interest, and replete with many but little known facts and fables relative to the history of poisons and their secret administration. Following on this we find a succinct account of the growth and development of the modern methods of chemically detecting poisons, at the end of which nearly three pages are devoted to a bibliography of the chief works on toxicology of the present century, in which we miss any reference to one of the most complete treatises on poisons extant—that forming the bulk of the seventeenth volume of Ziemssen's "Cyclopædia of Medicine."

In giving a scientific definition of a poison, Mr. Blyth somewhat enigmatically remarks that "The definition of a poison, in a scientific sense, should be broad enough to comprehend not only the human race, but the dual world of life, both animal and vegetable." He finally defines a poison thus:—"A substance of definite chemical composition, whether mineral or organic, may be called a poison, if it is capable of being taken into any living organisms, and causes, by its own inherent chemical nature, impairment or destruction of function." He excludes the bacteroid bodies met with in certain diseases, but apparently ignores the views of those observers who are of opinion that these organisms form or excrete true poisons of definite chemical constitutions.

A novelty in the work is the devotion of a section to what are termed "life-tests," i.e. the identification of poisons by their effects on living animals. This, and the elaborate instructions given on the authority of various writers, as to the methods to be adopted for separating and identi-

fying the various poisons, will be found invaluable to the analyst; and his only difficulty will be the choice of one out of the almost innumerable methods given for the separation of a single poison, say arsenic or opium.

THOMAS STEVENSON

Informe Oficial de la Comision cientifica agregada al estado mayor general de la Expedicion al Rio Negro (Patagonia) realizada en los meses de Abril, Mayo, y Junio de 1879, bajo las ordenes del General D. Julio A. Roca. Entrega I. Zoologia (con 4 laminas). Part 1. 4to, 168 pp. (Buenos Ayres, 1881.)

IN 1879 the Government of the Argentine Republic despatched an expedition to the southern confines of their territory for the suppression of the hordes of Indians that had for many years previously rendered the district of the Rio Negro unsafe to travellers and to settlers. Under the command of General Roca these marauding savages were successfully driven off to the south of the Rio Negro, and a new frontier, which they are not allowed to cross northwards, was established. General Roca (whose excellent example on this occasion it would be well if some of the Governments of Europe would follow) having invited a commission of scientific men to accompany his expedition, Dr. P. G. Lorentz and Mr. G. Niederlein were sent with him as botanical collectors, and Herr Schulz, Inspector of the Zoological Museum of Cordoba, as zoologist. The results of the last mentioned naturalist's labours are contained in the volume now before us, which has been prepared by Dr. A. Doering, with the assistance of Dr. Berg, Dr. Holmberg, and D. Enrique Lynch Arribalzaga, and is highly creditable to the youthful Academy of Natural Sciences of Cordoba, to whom, it would appear, the task of working out the scientific collections was intrusted.

Dr. Doering commences his labours by a chapter of general observations upon the fauna of the newly occupied territory, which he divides into four "zoogeographic zones"—(1) the region of the Southern Pampas; (2) the river-region of Northern Patagonia; (3) the central mountain-region; and (4) the eastern slopes of the Cordillera. The two last regions being very little known and not having been traversed by the expedition, are not discussed in the present essay, but the two former are subdivided into minor districts, and the principal zoological characters of each of their subdivisions are pointed out. Lists are also given of the principal mammals, birds, amphibians, and land-mollusks that are chiefly peculiar to the different districts.

Dr. Doering's instructive "zoogeographical" essay is followed by the systematic portion of the volume, in which the vertebrates and land-shells are treated of by the same naturalist, while his colleagues, Dr. Berg and Dr. Lynch Arribalzaga, have worked out the insects, and Dr. Holmberg the arachnidans. We have thus before us an excellent basis for a fauna of this hitherto little-known portion of the great Neotropical Region, which does credit alike to the Government of the Republic which instituted the investigation, and to the Academy of Natural Sciences of Cordoba, under whose auspices the work has been elaborated.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Instinct

IN his letter under this heading in last week's NATURE (p. 428), Mr. Romanes says that I now admit that the actions of

animals testify to some corresponding mental states. If he will kindly refer to my original paper he will find that my views have not undergone the change he implies, for I *then* wrote: "We have therefore grounds for believing that, running parallel to the neuroses of animals, there are certain psychoses"; and again: "Animal minds are also ejective; they are more or less distorted images of our own minds"; and, in my "Conclusion," "While fully admitting the great interest that attaches to the study of the inferred mental faculties of the higher brutes," &c.

Were I to take his concluding remark seriously, and say that, if I were the only individual to hold the view that the mental life of animals cannot be the subject-matter of a science, this would not prove my view untrue, Mr. Romanes would smile at my want of appreciation of his powers of sarcasm. I content myself with drawing Mr. Romanes' attention, and that of your readers, to the following quotations from Prof. Huxley's volume on the Crayfish:—"Under these circumstances it is really quite an open question whether a crayfish has a mind or not; moreover, the problem is an *absolutely insoluble one*, inasmuch as nothing short of being a crayfish would give us positive assurance that such an animal possesses consciousness. . . . So we may as well leave this question of the crayfish's mind on one side for the present, and turn to a *more profitable investigation*," &c. (p. 89). And again: "At the most, one may be justified in supposing the existence of something approaching dull feeling in ourselves, and so far as such obscure consciousness accompanies the molecular changes of its nervous substance, it will be right to speak of the mind of a crayfish" (p. 126).

The question now seems to turn on what we mean by a science. Animal minds, as ejectives, are distorted images of our own minds. Can we frame a *science* which deals with these distorted ejectives? Could we frame a *science* of astronomy if the only method of procedure were to observe the stars and planets in mirrors of *varying and unknown curvature*? If we can give an affirmative answer to the latter question, I am ready to admit that, in the same degree, we can give an affirmative answer to the former.

C. LLOYD MORGAN

Circular Rainbow seen from a Hill-top

READING Mr. Fleming's letter in your issue of January 31 (p. 310), I am moved to put on record an observation of my own involving shadows and rainbows upon a cloud. On August 19, 1878, I was encamped upon a plateau known as Table Cliff, in the southern part of Utah Territory. The plateau has its longer dimension north and south, and ends southward in an acute promontory, precipitous toward the south, west, and east. The altitude is about 10,000 feet. On that day the air was moist, and scattering clouds were to be seen both in the valley beneath and in the sky above. A strong wind blew from the west. On that side of the promontory the air was clear; but at the crest a cloud was formed, so that the view eastward was completely cut off. This phenomenon is not unusual on mountain summits, and has been plausibly explained as due to the sudden rarefaction of the air on the lee-side of an obstacle. Standing on the verge of the cliff just before sunset, I saw my own shadow and that of the cliff distinctly outlined on the cloud. The figure appeared to be about fifty feet distant, and was not colossal. About the head was a bright halo with a diameter several times greater than the head. Its colours included only a portion of the rainbow series, but I neglected to record them, and do not venture to recite from memory. At the usual angle outside there appeared two rainbows of great brilliancy, likewise concentric with the head. They did not describe complete circles, but terminated at the left and beneath, where they met the shadow of the cliff. I estimated that 225° of arc were displayed. The phenomenon was continuous for some hours, the cloud-mass being persistent in position, notwithstanding the fact that its particles had a velocity of twenty-five or thirty miles an hour.

The observation has more than a scientific interest, because, in the popular imagination, the heads of scientific observers are not usually adorned with halos.

G. K. GILBERT

Washington, U.S.A., February 25

Right-sidedness

In all the letters thus far published in *NATURE* on the subject of the tendency to deflection in walking, I find two things confounded which are quite distinct. There are two distinct senses

in which we may use the term *right-leggedness*: the one refers to *strength*, the other to *dexterity* or accurate co-ordination of muscular action. In the arm these two always go together; for dexterity gives greater use (dexterity, I believe, is largely inherited), and use gives greater strength. But in the leg these may be and often are dissociated. As Prof. Darwin truly says, the left leg is often the stronger, but I believe the right is nearly always the more dexterous. My own case is a typical one. I hop on my left leg, and rise from it in jumping. But I do so not only because the left is stronger, but also, and I think mainly, because I use the right more dexterously as a swinging weight. The dexterous management of the free leg is certainly no less important than the strength of the jumping leg. In kicking or performing any other movement requiring dexterity, I stand on the left leg and use the right.

In my own case the whole body is *right-sided*, as far as dexterity is concerned. Impressions on my left eye are as vivid, perhaps even more vivid, than on my right, yet I see more intelligently (as, for example, in using a microscope) with my right. In the case of double images of near objects when looking at a more distant one, it is the left-eye image (the right in position) which I neglect. In pointing with the finger, whether of the right or left hand, with both eyes open, it is the right-eye image of the finger (the left in position) that I range with the object. In the case of two or three left-handed persons on whom I have made observations, I have found, on the contrary, that it is the right-eye image that they neglect, and the left-eye image that they use in pointing.

JOSEPH LE CONTE

Berkeley, California, February 19

"Suicide" of Black Snakes

WHILE encamped near Mount Wynne, Kimberley district, for a few days from June 13, 1883, our survey party saw and killed several black snakes averaging about five feet in length. In three days I saw seven of these unpleasant visitors in our camp. As is well known, the black snake is one of the most venomous of the Australian serpents, and whenever met with is if possible destroyed. I have seen many killed, but usually they die hard; and even when the back is broken in several places will linger for more than an hour, still capable of revenging themselves on an incautious assailant.

On this occasion our men had disabled one, and as I was anxious to obtain the skin I induced them to let it alone (they usually cut off the head so as to insure death). While we were looking at it some large black ants attacked the wounded part—about three feet from its head—when it instantly turned short round and hit itself twice in the neck, with seeming determination. In less than one minute it was dead. There can be no doubt, therefore, that it was poisoned by its own venom.

I do not know if such a custom on the part of snakes has been recorded. However, my men assured me that they had often witnessed similar occurrences, especially in the case of the "death" or "deaf" adder, a very venomous Australian snake. One man informed me that he had often insured the death of this reptile by simply pinning him to the ground by means of a forked stick. In all cases the reptile would turn round, bite himself, and die instantly.

EDWARD F. HARDMAN,
Government Geologist

Perth, Western Australia, January 28

Sea Fish in Freshwater Rivers

DURING my journey up the Fitzroy River with the surveying party from King's Sound to the Leopold Ranges (between lat. 17° 4' and 18° 20' S.), I observed many specimens of sword- and saw-fish. They appeared at intervals the whole way up the river, but none observed were more than three feet or three feet six inches long. About 300 miles up on the Margaret River I procured the saw of a small one. It measures about nine inches long and two inches wide. A few days after this, a little higher up the river, some of our men found a shark five feet long, and recently killed, probably by natives. I could not visit the place, as we were then about to break up camp for our return, but the men showed us some of the teeth, which were unmistakably those of a shark. They were, besides, well acquainted with the appearance of that fish.

Some time after this, when returning down a branch of the Fitzroy, and camped in the sand of the river bed, I found the